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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,288	04/01/2004	Shirley Lee	10982031-8	2287

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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/817,288

Applicant(s)

LEE ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 and 34-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 34-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/1/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

**Claim Objections**

1. Claim 4 is objected to because of the following informalities:

There are two periods at the end of claim 4. It is advised that one period is deleted.

**Claim Rejections - 35 USC § 112**

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-6, 11-15, 36-39, and 44-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 3 and 36 each recite "wherein the at least one anionic binder comprises polymers..." The scope of the claim is confusing because it is not clear if the anionic binder present must always comprise more than one polymer, i.e. polymers, as suggested by the claim. It is not clear how if there is only one anionic binder present, i.e. "at least one", the binder comprises "polymers".

Similar questions arise with respect to claims 5 and 38, which depend on claim 3 and claim 36, respectively, and recite, "wherein the polymers comprise styrene". The scope of the claims is confusing for the reasons discussed above and further, it is not clear that if more than one polymer is present, must all the polymers comprise styrene?

Clarification is requested.

(c) Claim 11 and claim 44 each recite “wherein the at least one cationic component comprises cationic polymers”. The scope of the claim is confusing because it is not clear if the cationic component present must always comprise more than one cationic polymer, i.e. polymers, as suggested by the claim. It is not clear how if there is only one cationic component present, i.e. “at least one”, the component comprises “polymers”.

Similar questions arise with respect to claims 12 and 14-15, which depend on claim 11, and to claims 45 and 47-48, which each depend on claim 44, and that each recites “cationic polymers”.

Clarification is requested.

(c) Claim 38, which depends on claim 36, recites the limitation “the [branched] polymers” in line 1. There is insufficient antecedent basis for this limitation in the claim given that there is no disclosure in claim 36 or in claim 34, on which claim 36 ultimately depends, of branched polymers.

From the use of brackets around the word “branched” it appears that the word was meant to be deleted. However, the status identifier of claim 38 is “original” not “currently amended”. Thus, the word “branched” remains in the claim.

**Claim Rejections - 35 USC § 102**

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 7-12, 15, 34, 40-45, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al. (U.S. 5,624,484).

Takahashi et al. disclose an ink jet printing apparatus comprising one printhead portion containing underprinting fixer fluid composition i.e. liquid composition, comprising cationic component and one printhead portion containing ink comprising anionic component that is anionic dye. The anionic dye includes those with carboxylate groups. The cationic compound includes quaternary ammonium salt type compounds and cationic polymer such as polydiallylamine. The ink also contains low molecular weight hydrophilic compounds including lower alcohols. There is further disclosed method of ink jet printing comprising ejecting at a location on the printing medium the fixer fluid followed by ejecting the ink at the same location on the printing medium (col.3, lines 62-67, col.5, line 65-67, col.6, lines 32-37, col.8, lines 21-28 and 44-45, col.11, lines 55-65, and col.14, lines 40-55).

Col.4, lines 19-25 of Takahashi et al. disclose that upon reaction between the anionic dye in the ink and the cationic component in the fixer fluid, the viscosity increases. Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Takahashi et al. disclose ink and fixer fluid

identical to that presently claimed, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Takahashi et al. anticipates the present claims.

6. Claims 1, 7-12, 15, 34, 40-45, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurabayashi et al. (U.S. 5,700,314).

Kurabayashi et al. disclose an ink jet printing apparatus comprising one printhead portion containing underprinting fixer fluid composition i.e. liquid composition, comprising cationic component and one printhead portion containing ink comprising anionic component that is anionic dye. The anionic dye includes those with sulfonated or carboxylate groups. The cationic compounds quaternary ammonium salt type compounds and cationic polymer. The ink also contains low molecular weight hydrophilic compounds including lower alcohols. There is further disclosed method of ink jet printing comprising ejecting at a location on the printing medium the fixer fluid followed by ejecting the ink at the same location on the printing medium (col.5, lines 9-26 and 33-34, col.6, lines 19-25, col.7, lines 30-45, col.8, lines 47-49, col.9, lines 59-64, col.12, lines 43-54, and col.14, lines 1-10).

Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Kurabayashi et al. disclose ink and fixer fluid identical to that presently claimed including anionic dye and cationic component which will react or associate with each other, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Kurabayashi et al. anticipates the present claims.

7. Claims 1-16 and 34-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Kabalnov (U.S. 6,261,350) taken in view of the evidence given in Prasad (U.S. 5,196,056).

Kabalnov disclose an ink jet printing apparatus comprising one pen, i.e. printhead portion, containing underprinting fixer fluid composition comprising cationic component and one pen, i.e. printhead portion, containing ink comprising anionic dye and anionic binder such as hydrolyzed styrene-maleic anhydride. The anionic dye includes Acid Blue 9 and Acid Blue 185 which are well known, as found in Prasad, to include sulfonated functional groups (col.4, lines 17-19). The cationic compounds include polyethyleneimine which is intrinsically branched as well as quaternary ammonium type salts. The ink also contains low molecular weight hydrophilic compounds including salt such as sodium hydroxide while the fixer fluid comprises polyvalent metal salt that provides cations such as calcium, aluminum, barium, and magnesium. There is further disclosed method of ink jet printing comprising ejecting at a location on the printing medium the fixer fluid followed by ejecting the ink at the same location on the printing medium (col.3, lines 39-41 and 66, col.5, lines 56-59, col.10, lines 1-3, col.11, lines 25, 31-32, and 35-36, col.12, lines 17-32, 41-46, and 50-58, and col.13, lines 20-24).

Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Kabalnov discloses ink and fixer fluid identical to that presently claimed including anionic dye and cationic polymer which will react or associate with each other, it is clear that the mixture of ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.

In light of the above, it is clear that Kabalnov anticipates the present claims.

8. Claims 1-5, 7-10, 16, 34-38, 40-43, and 49 are rejected under 35 U.S.C. 102(a) as being anticipated by Watanabe et al. (U.S. 6,080,229).

Watanabe et al. disclose an ink jet printing apparatus comprising one printhead portion containing underprinting fixer fluid composition comprising cationic component and polyvalent metal salt and one printhead portion containing ink comprising anionic dye, i.e. Acid dye, and anionic polymer obtained from monomers including acrylate and styrene. The cationic compounds include quaternary ammonium salt type compounds of the formula  $R^1R^2R^3R^4N^+X^-$  while the polyvalent metal salt provides cations such as calcium, aluminum, barium, and magnesium. The ink also contains low molecular weight hydrophilic compounds including lower alcohols. There is further disclosed method of ink jet printing comprising ejecting at a location on the printing medium the fixer fluid followed by ejecting the ink at the same location on the printing medium (col.2, lines 46-56, col.3, lines 36-46, col.6, line 65-col.7, line 15, col.8, lines 56-59, col.9, lines 48-50, col.10, lines 65-67, col.11, lines 45 and 64-67, and col.13, lines 12-20 and 35-46).

Although there is no explicit disclosure that the printed ink and fixer fluid together form an amorphous, viscous fluid with viscosity greater than the ink, given that Watanabe et al. disclose ink and fixer fluid identical to that presently claimed including anionic dye and cationic component which will react or associate with each other, it is clear that the mixture of the ink and fixer fluid will inherently produce an amorphous, viscous fluid with viscosity as presently claimed.



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In light of the above, it is clear that Watanabe et al. anticipate the present claims.

**Claim Rejections - 35 USC § 103**

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2-6 and 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (U.S. 5,624,484) or Kurabayashi et al. (U.S. 5,700,314) either of which in view of either Zhu (U.S. 5,889,083) or EP 735120.

The disclosures with respect to Takahashi et al. and Kurabayashi et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Takahashi et al. or Kurabayashi et al. and the present claimed invention is the requirement in the claims of anionic binder.

Zhu, which is drawn to ink jet inks, disclose the use of hydrolyzed styrene-maleic anhydride binder in order to fix the colorant to substrate as well as to impart abrasion resistance to the ink (col.4, lines 47-54 and col.6, lines 5-9).

Alternatively, EP 735120, which is drawn to ink jet inks, disclose the use of hydrolyzed styrene-maleic anhydride binder in order to provide good adhesion of the ink to substrate (page 2, lines 47-49 and 49-53 and page 3, lines 24-28).

In light of the motivation for using hydrolyzed styrene-maleic anhydride binder disclosed by either Zhu or EP 735120 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such binder in either Kurabayashi et al. or Takahashi et al. in order to produce an ink which has good adhesion of colorant to substrate and abrasion resistance, or alternatively, good adhesion of ink to substrate, and thereby arrive at the claimed invention.

12. Claims 13 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (U.S. 5,624,484) or Kurabayashi et al. (U.S. 5,700,314) either of which in view of Yatake (U.S. 6,004,389).

The disclosures with respect to Takahashi et al. and Kurabayashi et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Takahashi et al. or Kurabayashi et al. and the present claimed invention is the requirement in the claims of cationic polymer that comprises branched polymer chains.

Yatake et al., which is drawn to ink jet ink composition and fixer fluid, disclose the use of polyethyleneimine, an intrinsically branched cationic polymer, in the fixer fluid composition wherein the polyethyleneimine reacts with the colorant in the ink composition in order to prevent bleed of the ink (col.1, line 13 and col.16, lines 40-43 and 48). Additionally, Yatake et al. disclose the equivalence and interchangeability of polyallylamine, as disclosed by either Kurabayashi et al. (col.6, line 22) or Takahashi et al. (col.4, line 22) with polyethyleneimine as the cationic compound in the fixer fluid.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use cationic polymer which comprises branched polymer chains, i.e. polyethyleneimine, in either Kurabayashi et al. or Takahashi et al. in order to produce a fixer fluid which prevents ink bleed, and thereby arrive at the claimed invention.

13. Claims 14, 16, 47, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (U.S. 5,624,484) or Kurabayashi et al. (U.S. 5,700,314) either of which in view of Watanabe et al. (U.S. 6,080,229).

The disclosures with respect to Takahashi et al. or Kurabayashi et al. in paragraphs 5 and 6, respectively, are incorporated here by reference.

The difference between Takahashi et al. or Kurabayashi et al. and the present claimed invention is the requirement in the claims of cations.

Watanabe et al., which is drawn to ink jet ink and fixer fluid, disclose the use of polyvalent metal salt which provides cations such as calcium, aluminum, barium, and magnesium to the fixer fluid as presently claimed (col.3, lines 36-46) wherein the motivation for using such salts is that the salts react with the colorant present in the ink in order to prevent bleeding and produce an image with high color density and free from feathering (col.2, line 57- col.3, line 5).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use polyvalent metals salts in either Kurabayashi et al. or Takahashi et al. in order to produce fixer fluids which prevent bleeding and produce an image with high color density and free from feathering, and thereby arrive at the claimed invention.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Iijima (U.S. 6,106,598) disclose an ink set for ink jet printing which comprises underprinted fixer fluid and ink wherein the viscosity of a mixture of fixer fluid and ink is greater than the viscosity of the ink, however, there is no disclosure that the fixer fluid comprises cationic compound as presently claimed.

Yano et al. (U.S. 6,460,989) disclose ink jet printing apparatus comprising one printhead containing fixer fluid comprising cationic polymer and one printhead containing ink comprising anionic component such as anionic dye or resin obtained from styrene and maleic acid

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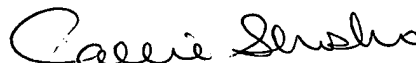
derivatives. However, given the effective filing date of the reference, Yano et al. is not applicable against the present claims under any subsection of 35 USC 102.

Tsang et al. (U.S. 6,450,632) disclose ink jet printing apparatus comprising one printhead containing fixer fluid comprising cationic polymer and one printhead containing ink comprising anionic component such as anionic pigment.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Callie E. Shosho  
Primary Examiner  
Art Unit 1714